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(88) Date of publication of the international search report:
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: COMPOSITIONS AND METHODS FOR DETECTING AND QUANTIFYING GENE EXPRESSION

(57) Abstract: Compositions and methods for improving detection sensitivity in nucleic acid microarray analysis are disclosed, including methods of purifying nucleic acids, methods of synthesizing fluorescent DNA probes, methods of hybridization, and methods of activating a substrate for target molecule attachment are disclosed.

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/10482

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C03C17/34 C12Q1/68

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C03C C12Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EP0-Internal, WPI Data, INSPEC, COMPENDEX, BIOSIS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 99 20640 A (SENSORCHEM INTERNATIONAL CORP) 29 April 1999 (1999-04-29) page 35, line 28 -page 36, line 8; claims page 45, line 32 -page 46, line 14 ---	1-64, 84-92
X	US 5 997 961 A (LIANG LIANG ET AL) 7 December 1999 (1999-12-07) column 7, line 63 -column 8, line 11; claims ---	41-54
A	EP 0 947 246 A (CORNING INC) 6 October 1999 (1999-10-06) page 2 -page 3 -----	1-64, 84-92

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

9 October 2001

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Name and mailing address of the ISA

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 01/10482

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-64, 84-92

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-64,84-92

Microarrays, activated glass slides and methods for their preparation, in which surface silanization is carried out in toluene in the absence of acetone or an alcohol, as well as analysis methods in which these microarrays are used.

2. Claims: 65-83

Methods for preparing detectably labeled sDNA, cDNA or cRNA probes

3. Claims: 93-104

Methods of hybridizing a detectable polynucleotide probe to a target polynucleotide on a support surface.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 01/10482

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9920640	A	29-04-1999	US 6169194 B1	02-01-2001
			AU 9526098 A	10-05-1999
			WO 9920640 A2	29-04-1999
			EP 1023309 A2	02-08-2000
			JP 2001520396 T	30-10-2001
			US 6159695 A	12-12-2000

US 5997961	A	07-12-1999	US 6270903 B1	07-08-2001

EP 0947246	A	06-10-1999	EP 0947246 A1	06-10-1999
			CN 1314873 T	26-09-2001
			EP 1068155 A1	17-01-2001
			WO 9940038 A1	12-08-1999
